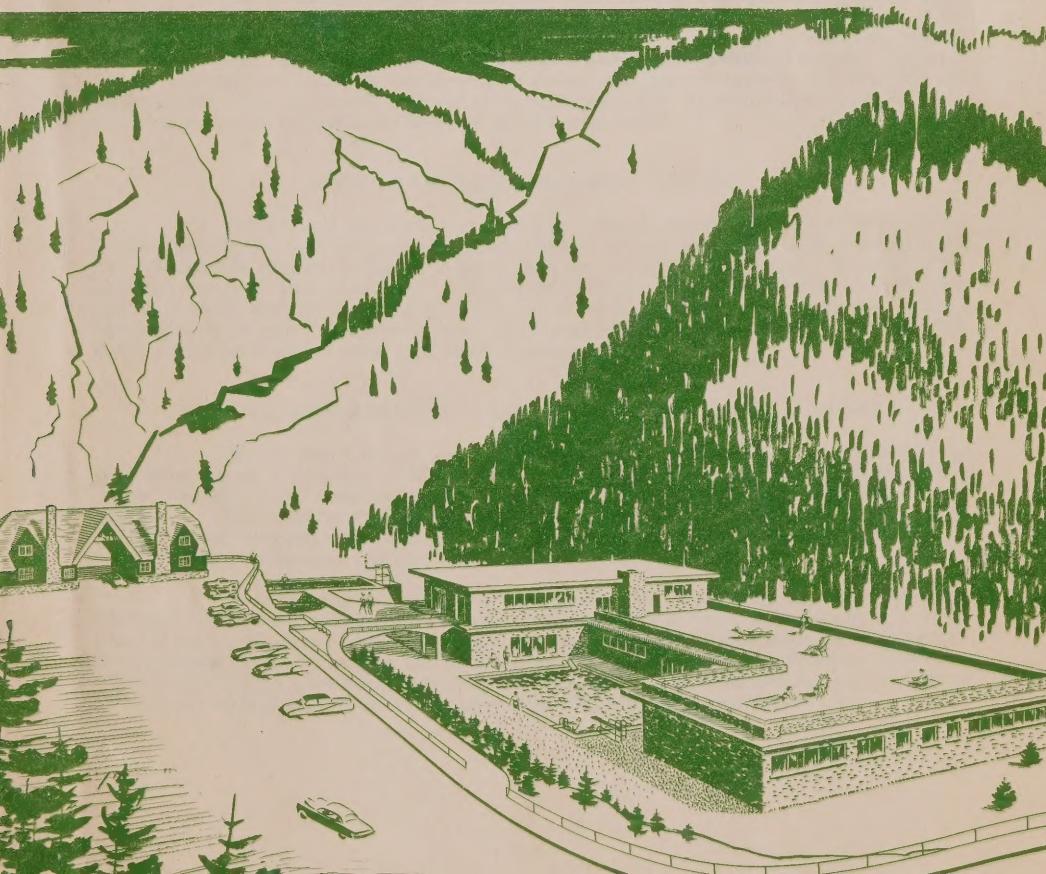


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# Hot Mineral Springs in Canada's National Parks





Issued under the authority of the  
Honourable Jean Lesage, Minister of  
Northern Affairs and National Resources

## HOT MINERAL SPRINGS IN CANADA'S NATIONAL PARKS

The development of hot mineral springs in Canada's National Parks, for healthful recreation, has long been the policy of National Park's Administration. Hot mineral springs are among the wonders of the Canadian Rockies and provide some of the main attractions in three of the mountain national parks—Jasper and Banff National Parks in Alberta and Kootenay National Park in British Columbia.

### WHAT CAUSES HOT SPRINGS?

There are several explanations for this natural phenomenon. One is that the water is of surface origin, gets into the rocks in various ways and passes over heated rock masses at great depth, finally escaping to the surface in the form of a hot spring. Another is that these hot springs are of a magmatic origin; that is to say, they are part of the hot liquid strata beneath the earth's crust and encounter the light of the day for the first time on reaching the surface.

### PROVIDE HEALTHFUL RECREATION

Whatever the origin of Canada's national hot springs, they have a wide reputation for healthful qualities and are visited each year by thousands of persons of all ages and from all walks of life. Long before the first white man penetrated the "Great Mountain Barrier" the Indians knew of these springs and their medicinal values. Mineral springs have figured largely in health treatment since the time of Hippocrates the "Father of Medicine". He apparently believed in "water externally, internally and eternally," not as a panacea for all ills but as an effective aid to better health.

### ORIGIN OF THE NATIONAL PARKS

Hot mineral springs in Canada, as in the United States, provided the incentive for establishing the first national park. In 1885 an area of 10 square miles surrounding the hot sulphur springs at Banff, Alberta was set apart for public use. In 1887, this area was enlarged and established as Rocky Mountains (now Banff) National Park, the first link in a system of national playgrounds which now stretches from the Selkirk Mountains in British Columbia to the rugged coast of Cape Breton Island in Nova Scotia and covers a total area of more than 29,000 square miles.

### MIETTE HOT SPRINGS, JASPER NATIONAL PARK, ALBERTA

Miette Hot Springs, four in number, issue from rocks in the narrow gorge of Sulphur Creek, a tributary of Fiddle River. These springs, located about 38 miles from Jasper townsite and accessible by a modern motor road, are among the hottest on the continent. The temperature of one spring reaches 126 degrees F. at the source. The flow of the springs has been estimated at 170,000 gallons a day, and the waters are piped to a large bathing establishment on the north side of the valley.

This bathing establishment, opened in 1938, includes an attractive building equipped with plunges, steam-rooms, and dressing-rooms for men and women. A large outdoor pool, graduated in depth, has floodlight and submarine illumination for evening use. A promenade deck overlooking the pool provides a vantage point for visitors. The temperature of the pool is maintained at about 90 degrees F. The establishment is in charge of an experienced staff, and is open from approximately May 15 to September 15.

The drive to the springs from Jasper townsite or from the Jasper Park Lodge provides a pleasant outing. The Edmonton-Jasper Highway is followed eastward along the Athabasca River Valley for a distance of 27 miles to Pocahontas. Here the route turns southeast, and after climbing a low divide, follows the valley of Fiddle River to Sulphur Creek and the hot springs. At Miette Hot Springs, visitors will find excellent tourist accommodation in a modern bungalow installation. A dining room and store are operated in connection with the bungalow camp. For visitors carrying their own camping equipment, a large camp-ground with kitchen shelters, running water, electricity, and modern sanitary conveniences has been laid out. The camp-ground is available on payment of a small fee.

### BANFF HOT SPRINGS, BANFF NATIONAL PARK, ALBERTA

There are five main hot springs at Banff, headquarters of Banff National Park, and of these, three have been developed. Easily accessible are the Cave and Basin Springs, situated about a mile from Bow River Bridge. Here the Federal Government has erected a large outdoor pool, 150 feet by 35 feet, and a smaller pool which combines a wading pool for children. The large pool is fed by the Cave and Basin Springs, and the smaller from the Basin Spring. The water in the large pool is 80 degrees and in the small pool 88 degrees F. in temperature. Commodious dressing-rooms for men and women are available in the bathing establishment serving the pools. The Cave and Basin pools are open to the public daily from May 15 to September 30.

The Upper Hot Springs are situated on the slopes of Sulphur Mountain about two and a half miles from the Bow River Bridge, and are accessible by motor road. Here a fine bathing establishment includes a large outdoor pool which is open the year round. Dressing-rooms, plunge baths and steam-rooms are available for public use. The water in the pool is maintained at a temperature of about 100 degrees F.

### RADIUM HOT SPRINGS, KOOTENAY NATIONAL PARK, B.C.

Radium Hot Springs are situated near the park entrance at the south-western corner of Kootenay National Park, British Columbia, about 90 miles by highway from Banff. The waters, which have a temperature of 114 degrees F. at their source, issue from rocks at the base of Redstreak Mountain in Sinclair Creek valley. These hot springs have a flow of about 300 gallons per minute, and supply the Aquacourt—a new bathing establishment completed in 1950. The Aquacourt consists of two outdoor pools, and a fine modern concrete building containing dressing booths, locker rooms, and showers. These facilities are available for year round use. Also in the Aquacourt building are first-aid rooms, plunge pools, steam-rooms, and massage concession, under the supervision of trained operators, open from June through September. A coffee shop offers refreshments for the visitor during the season. There is an elevator for the use of wheel-chair patients and a broad roof terrace for sunbathers and spectators.

Radium Hot Springs are accessible by the Banff-Windermere Highway from Banff, and the Provincial Highway System from Cranbrook and other points in British Columbia. Accommodation is provided by several hotels and bungalow cabin installations in the townsite of Radium Hot Springs nearby.

### GENERAL INFORMATION

While attendants are on duty during the hours that these bathing establishments are open to the public, persons using pools, plunges, steam-rooms and other facilities do so at their own discretion. Attendants, however, usually warn bathers that immersion should not be continued for long periods.

Accommodation is not available within the bathing establishments, and must be obtained at the hotels and bungalow cabin installations in the vicinity.

## FEES

Fees for the use of bathing facilities at the hot mineral springs in the national parks are as follows:

### Swimming Pools and Dressing Rooms

(a) Admission (basic rates)				
Adults.....				.35
Children, 16 and under.....				.15
(b) Admission plus bathing suit or towel				
Adults.....				.50
Children, 16 and under.....				.30
(c) Admission plus bathing suit and towel				
Adults.....				.65
Children, 16 and under.....				.45

### Steam Baths and Plunge Pools

Towels, sheet and blankets, supplied by National Parks Service..... \$1.00

## CHEMICAL ANALYSIS OF THE SPRINGS

### MIETTE HOT SPRINGS, JASPER NATIONAL PARK, ALBERTA

In 1934 the flow of water from four of the Miette Hot Springs was checked by park officers and samples of water forwarded to the Federal Department of Mines for analysis. The results of this investigation follow:

Flow and Temperature.....	Spring No. 1	Spring No. 2	Spring No. 3	Spring No. 4
Gallons per 24 hrs.....	93,254	46,627	negligible	32,291
Temperature °F.....	125	126	113	110
General Analysis.....	P.P.M.	P.P.M.	P.P.M.	P.P.M.*
Total solids.....	1906.8	1972.0	1977.2	1850
Colour.....	5	5	5	5
Reaction.....	Alkaline	Alkaline	Alkaline	Alkaline
Ca (Calcium).....	399	418	405	393
Mg (Magnesium).....	73	73	74	72
SO <sub>4</sub> (Sulphates).....	1105	1131	1109	1072
HCO <sub>3</sub> (Hydrocarbonates).....	118	116	116	126
Cl (Chlorides).....	8	7	7	7
	1703	1745	1711	1670

### Hypothetical Combinations

Ca (HCO <sub>3</sub> ) <sub>2</sub> Calcium bicarbonate.....	157	154	154	167
CaSO <sub>4</sub> Calcium sulphate.....	1223	1291	1247	1196
MgSO <sub>4</sub> Magnesium sulphate.....	303	276	287	296
MgCl <sub>2</sub> Magnesium chloride.....	11	9	9	9
Mg(OH) <sub>2</sub> Magnesium hydroxide.....	14	12	12	12
	1708	1742	1709	1680

\* P.P.M.--Parts per million.

## UPPER HOT SPRINGS, BANFF NATIONAL PARK, ALBERTA

In 1917 the following particulars were obtained as a result of the examination and analysis of the water from the Upper Hot Springs at Banff:

### Flow and Temperature

120 gallons per minute; temperature, 115° F.

### General Analysis

#### Constituents

		Parts Per Million
Sulphuric acid	(SO <sub>4</sub> )	643
Bicarbonic acid	(HCO <sub>3</sub> )	133
Chlorine	(Cl)	10
Silica	(SiO <sub>2</sub> )	31
Iron	(Fe)	1.7
Aluminium	(Al)	
Manganese	(Mn)	0.01
Calcium	(Ca)	230
Strontium	(Sr)	3.2
Magnesium	(Mg)	39.7
Lithium	(Li)	0.1
Potassium	(K)	3.7
Sodium	(Na)	5.3
Ammonium	(NH <sub>4</sub> )	0.1

Total

1,100.81

Total solids in solution, residue dried at 110° C.

1,098

### Gases

		C.C. Per Litre	Parts Per Million
Carbon dioxide	(CO <sub>2</sub> )	25.3	49.8
Hydrogen Sulphide	(H <sub>2</sub> S)	1.2	1.83

### Hypothetical Combinations

#### Constituents

Ammonium chloride	(NH <sub>4</sub> Cl)	0.27
Lithium chloride	(LiCl)	0.59
Potassium chloride	(KCl)	7.08
Sodium chloride	(NaCl)	9.82
Sodium sulphate	(Na <sub>2</sub> SO)	4.40
Magnesium sulphate	(MgSO <sub>4</sub> )	196.50
Calcium sulphate	(CaSO <sub>4</sub> )	672.20
Calcium bicarbonate	(Ca(HCO <sub>3</sub> ) <sub>2</sub> )	165.80
Strontium bicarbonate	(Sr(HCO <sub>3</sub> ) <sub>2</sub> )	7.65
Ferrous bicarbonate	(Fe(HCO <sub>3</sub> ) <sub>2</sub> )	5.43
Silica	(SiO <sub>2</sub> )	31.0

1,100.74

## RADIUM HOT SPRINGS, KOOTENAY NATIONAL PARK, BRITISH COLUMBIA

In 1923 the following particulars were obtained as the result of the examination and analysis of the waters from Radium Hot Springs, B.C., by Mr. R. T. Elworthy of the Department of Mines, Ottawa.

### Flow and Temperature

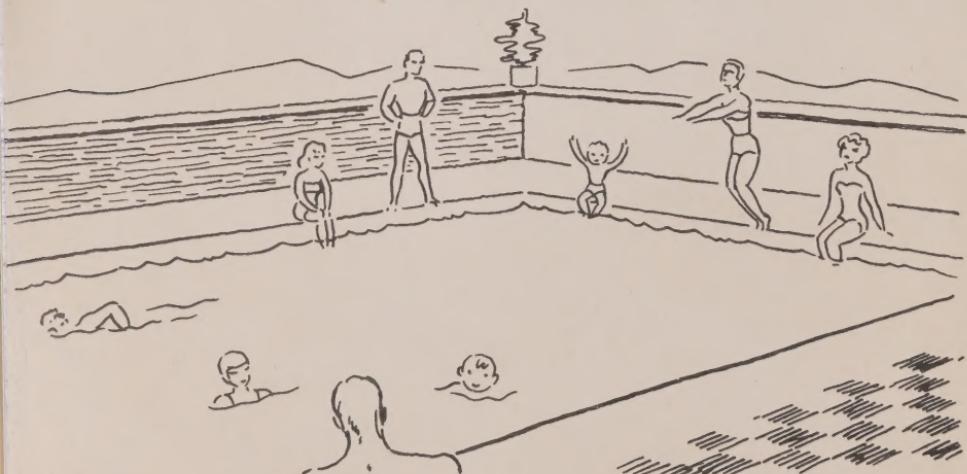
Gallons per minute, 330; temperature, 114° F.

## Radium Hot Springs (Cont'd)

General Analysis	Parts Per Million	
Constituents		
Bicarbonic acid	( $\text{HCO}_3$ )	216
Sulphuric acid	( $\text{SO}_4$ )	306
Chlorine	(Cl)	12.4
Sodium	(Na)	12.0
Potassium	(K)	3.1
Calcium	(Ca)	140.5
Magnesium	(Mg)	32.0
Iron oxide and alumina silica	( $\text{SiO}_2$ )	32.6
		754.6
Total solids in solution, residue dried at 110° C.	696.0	

## Hypothetical Combinations

Constituents	Parts Per Million	
Sodium chloride	(NaCl)	15.8
Potassium chloride	(KCl)	6.0
Sodium sulphate	( $\text{Na}_2\text{SO}_4$ )	18.5
Magnesium sulphate	( $\text{MgSO}_4$ )	158.0
Calcium sulphate	( $\text{CaSO}_4$ )	237.0
Calcium bicarbonate	( $\text{Ca}(\text{HCO}_3)_2$ )	287.0
Silica	( $\text{SiO}_2$ )	32.6
	754.9	



Compiled in co-operation with the National Parks Branch,  
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